

# **ADJUSTABLE CURTAIN ASSEMBLY IN PERMEABILITY TO LIGHT**

## **BACKGROUND OF THE INVENTION**

### **1. Field of the Invention**

The present invention relates to a curtain assembly, and more particularly to a curtain assembly that is adjustable in permeability to light.

### **2. Description of Related Art**

Curtains are mounted onto windows or doors to block sunlight and to make the inside environment comfortable for a user. When the curtain is extended or retracted, blockage of light by the conventional curtain will be adjusted based on needs of the user.

However, because a conventional curtain is always made of cloth, plastic material or the like, the permeability to light of the conventional curtain is not adjustable. The conventional curtain is not versatile in use especially at a specific location, such as an infant room or a bedroom in a rest home for aged. To change the permeability to light, the curtain must be extended or retracted. When the curtain is retracted, the interior of the room is visible to any person outside via windows or doors, such that private matters of the user cannot be hidden.

To overcome the shortcomings, the present invention tends to provide an adjustable curtain assembly to mitigate or obviate the aforementioned problems.

## **SUMMARY OF THE INVENTION**

The main objective of the invention is to provide a curtain assembly that is adjustable in permeability to light and is versatile in use. The curtain assembly has a frame, a first curtain, a second curtain and a positioning device. The frame has a top rod, a bottom rod and two side rods mounted between the top rod and

1 the bottom rod. The curtains are attached respectively to the top rod and the  
2 bottom rod of the frame and each has a permeability to light different from each  
3 other. The positioning device is mounted in the frame and connected to the first  
4 and second curtains to hold the first and second curtains at desired positions.

5 Other objects, advantages and novel features of the invention will  
6 become more apparent from the following detailed description when taken in  
7 conjunction with the accompanying drawings.

#### 8 BRIEF DESCRIPTION OF THE DRAWINGS

9 Fig. 1 is a perspective view of a curtain assembly in accordance with the  
10 present invention;

11 Fig. 2 is a partial top plan view in partial cross section of the side rod and  
12 the curtain of the curtain assembly in Fig. 1;

13 Fig. 3 is a side plan view of the curtain assembly in Fig. 1 showing the  
14 two curtains are extended in half respectively;

15 Fig. 4 is an operational side plan view of the curtain assembly in Fig. 1  
16 showing that the first curtain is completely extended and the second curtain is  
17 completely retracted;

18 Fig. 5 is an operational side plan view of the curtain assembly in Fig. 1  
19 showing that the first curtain is completely retracted and the second curtain is  
20 completely extended;

21 Fig. 6 is an operational side plan view of the curtain assembly in Fig. 1  
22 showing that both two curtains are completely retracted; and

23 Fig. 7 is a front plan view of the curtain assembly in Fig. 1.

#### 24 DETAILED DESCRIPTION OF PREFERRED EMBODIMENT

1           With reference to Figs. 1 to 3 and 7, a curtain assembly in accordance  
2   with the present invention comprises a frame, a first curtain (12), a second  
3   curtain (22), a connected device and a positioning device (40). The frame  
4   comprises a top rod (10), a bottom rod (20) and two side rods (30,31). The top  
5   rod (10) is adapted to be secured on a top flange of a window or a door, and the  
6   bottom rod (20) is adapted to be secured on a bottom flange of the window or the  
7   door and corresponds to the top rod (10). The side rods (30,31) are mounted  
8   between the top rod (10) and the bottom rod (20) to make the frame rectangular.  
9   Each side rod (30,31) has a side provided with a rail channel (311) corresponding  
10   to each other.

11           The first and second curtains (12,22) are retractably mounted  
12   respectively on the top rod (10) and the bottom rod (20) of the frame. The  
13   curtains have a certain permeability to light. Each curtain (12,22) has a first end  
14   wound in a respective one of the top and bottom rods (10,20), a second end, two  
15   sides and two rails (24). The sides of each curtain (12,22) are slidably received  
16   respectively in the rail channels (311) in the side rods (30,31). The second end of  
17   the second curtain (22) is detachably connected to the second end of the first  
18   curtain (12) with the connecting device. In an optional embodiment, the  
19   connecting device comprises two end rods (11,21) attached respectively to the  
20   second ends of the curtains (12,22). Each end rod (11,21) has an engaging  
21   channel (13,23) corresponding to the engaging channel (13,23) in the other end  
22   rod (11,21). An engaging stick (14) is securely received in the engaging channel  
23   (13) in one of the end rods (11) and detachably engages with the engaging  
24   channel (23) in the other end rod (21). With the engagement between the

1 engaging stick (14) and the engaging channels (13,23), the curtains (12,22) can  
2 be connected together.

3 In addition, the first permeability to light of the first curtain (12) is  
4 different from the second permeability to light of the second curtain (22). In an  
5 optional embodiment, the first curtain (12) has a first permeability to light that  
6 allows partial sunlight to permeate through the first curtain (12) at a  
7 predetermined ratio, such as 30%, 45%, 50% and so on. The first permeability to  
8 light at a ratio of 30% means the first curtain (12) allows 30% of light to  
9 permeate through the first curtain (12). The second curtain (22) has a second  
10 permeability to light that can block light completely or at a desired high ratio  
11 chosen from 51% to 100%, wherein the second permeability to light at a ratio of  
12 100% means the second curtain (22) can completely block light.

13 The rails (24) are mounted respective to two sides of each curtain (12,22)  
14 and are slidably received respectively in the rail channels (311) in the side rods  
15 (30,31). With the engagements of the rails (24) and the rail channels (311) in the  
16 side rods (30,31), the movements of the curtains (12,22) are smooth.

17 The positioning device (40) is mounted on the frame and is connected to  
18 the curtains (12,22) to hold the curtains (12,22) at any desired position. In an  
19 optional embodiment, the positioning device (40) comprises four strings (42)  
20 each connected to the top and bottom rods (10,20) and extending through one of  
21 the end rods (11,21). Each string (42) has a first end connected to one end of the  
22 top rod (10) and a second end extending through one of the end rods (11,21) and  
23 attached to the bottom rod (20) at one end opposite to the end of the top rod (10)  
24 to which the first end is connected. Consequently, the curtains (12,22) will be

1 held at any desired position by means of tensions provided by the strings (42).

2 With such a curtain assembly, with reference to Figs. 3 to 6, the  
3 permeability of the curtain assembly can be adjusted by means of expanding the  
4 curtains (12,22) at different positions. For example, the sunlight can be  
5 completely blocked when the second curtain (22) is fully extended and the first  
6 curtain (12) is fully retracted as shown in Fig. 4, whereby the private matters of  
7 the indoor user can be fully hidden and protected. Because the sides of the  
8 second curtain (22) are received respectively in the rail channels (311) in the side  
9 rods (30,31), there is not any gap between the second curtain (22) and the frame  
10 when the second curtain (22) is completely extended. Therefore, the sunlight can  
11 be completely blocked with the extended second curtain (22) to make the indoor a  
12 dark room.

13 The sunlight can be blocked at a desired ratio when the second curtain  
14 (22) is partially or fully retracted and the first curtain (12) is partially or fully  
15 extended as shown in Figs. 3 and 5.

16 When the user wants to completely open the curtain assembly, the  
17 connecting device is detached and the curtains (12,22) are completely retracted  
18 respectively into the top and bottom rods (11,21). Therefore, the user can adjust  
19 the permeability to light of the curtain assembly based on the user's needs. The  
20 curtain assembly can serve as a see-through or light filter curtain, a room  
21 darkener or a black out curtain by means of adjusting the positions of the first  
22 and second curtains (12,22), such that the use of the curtain assembly is versatile.

23 Even though numerous characteristics and advantages of the present  
24 invention have been set forth in the foregoing description, together with details

1 of the structure and function of the invention, the disclosure is illustrative only,  
2 and changes may be made in detail, especially in matters of shape, size, and  
3 arrangement of parts within the principles of the invention to the full extent  
4 indicated by the broad general meaning of the terms in which the appended  
5 claims are expressed.